TEXAS OCCUPATIONAL EMPLOYMENT STATISTICS

STAFFING PATTERNS FOR

EDUCATIONAL SERVICES

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PREFACE

This publication summarizes the results of Texas' first and only endeavor to gather occupational information from the Education sector of the economy.

This report is the product of a Federal-State Cooperative Program. The Bureau of Labor Statistics developed the procedures and provided technical assistance. The Employment and Training Administration funded the project and was responsible for the administrative aspects of the program. The Texas Employment Commission (TEC) and the Texas Education Agency collected the occupational employment data. TEC analyzed the data, provided the necessary computer services, and published these findings.

Special thanks are extended to the many cooperating employers who provided the survey data which made this publication possible.

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INTRODUCTION

The Occupational Employment Statistics (OES) Program is a part of a Federal-State Cooperative Program involving State Employment Security Agencies in conjunction with the Employment and Training Administration and the Bureau of Labor Statistics.

The OES Program is designed to: (1) provide accurate profiles of occupational resources by industry and trends in the number of workers by occupation, (2) aid in projections of future manpower requirements by industry and occupation, and (3) identify emerging and disappearing occupations. This information will help in the development of educational training programs and will also provide valuable information for employment counselors and manpower planners. These data will be used to refine and modify the worker-demand projections generated through the Industry-Occupation Matrix System.

Data for Educational Services were collected during the survey week of October 12, 1978.

The purpose of this survey is twofold. First, the survey will enable the Bureau of Labor Statistics (BLS) to have national demand employment statistics projections. Second, the data from the survey will be used by the National Center for Education Statistics (NCES) and the Statistical Analysis Group in Education (SAGE). Because of procedural requirements involved within the public elementary and secondary education sector, it was necessary that BLS and NCES get approval for this survey from the Committee on Evaluation and Information Systems. A primary responsibility of this committee is to monitor Federal data collection activities to guard against duplication and unnecessary reporting burdens.

This survey also represents estimated employment by occupation for the following: public elementary and secondary schools, nonpublic elementary and secondary schools, colleges, universities, professional schools, junior colleges, technical schools, private libraries and information centers, correspondence and vocational schools, and miscellaneous educational services.

Multiple job holders (performing work in two or more listed occupations) were classified only once in the occupation requiring the highest level of skill. Working supervisors (those spending 20% or more of their time at work similar to that performed by workers under their supervision) were classified in the occupations that were most closely related to their work duties.

METHODOLOGY

The Sample and Estimating Procedures

The sampling frame furnished by the National Center for Education Statistics was used as the base for generating estimates for the bulk of Educational Services. Normally total employment (benchmark) figures are available by industry, area, and size from ES-202 records. For Education, however, this benchmark source is generally inadequate in coverage. This does not preclude making estimates. The weighted response method gives a valid estimate, provided the weights are adjusted to reflect the nonrespondents (weights of usable responding units were adjusted in all sampling cells to account for the nonresponse incurred in each cell). For the most part, ES-202 records were used for private libraries and information centers and miscellaneous schools and educational services.

When standard estimating procedures were employed, a ratio method (established statistical procedure) was used. Any given size class of any given Educational segment represents an estimating cell. All establishments in a given cell are assigned a sample weight which is the inverse of the sampling ratio. There is a direct relationship between employment and the number of units within a size class to determine the ratio, or the probability of sample selection.

The employment for any specific occupation in each establishment is inflated by its sample weight and summed for all sample establishments in the cell. A ratio is then derived of the weighted employment for each occupation to the weighted reported total employment. This ratio is then multiplied by the benchmark employment for that estimating cell as of October 12, 1978, the survey month, thus yielding the occupational makeup of the estimating cell for that date.

Like occupational employments are summed across all employment size classes within each three-digit SIC to arrive at a total industry employment for each occupation. Two-digit estimates of occupational employment were derived by summing estimates across three-digit SIC industries.

For total Educational Services, the estimated benchmark (universe) employment was 423,330.

Sampling Error

In Educational Services, the sampling error is an arithmetic measure of the precision of the estimate. It is the error that results from the difference between data obtained if the same survey methods were applied to collecting identical information from the entire population (universe).

The relative errors express the absolute sampling error of an estimate as a percentage of that estimate. Because this measure of precision is on the same base for different estimates, comparison is possible. The relative errors are such that the chances are two out of three (68%) that the results of such a complete survey of all firms would not differ by plus or minus one relative standard error from the OES occupational estimates, and an interval of two relative standard errors will yield a 95% confidence level.

For example, the OES estimate of employment in Educational Services for the number of Accountants and Auditors employed was 510 with a relative standard error of 5.81%. The chances are two out of three that the true number of workers employed in that occupation at the time of the survey was between 480 and 540 ($510 \pm .0581 \times 510$), and we may be 95% certain that the true number fell between 451 and 569 ($510 \pm 2 \times .0581 \times 510$). The relative standard error allows the user to judge, with a given degree of confidence, the quality of any particular occupational estimate. It is a measure of the relative dispersion within the data collected, and indicates the occupational coefficient of variation of the population from which the sample was drawn.

Nonsampling Error

In Educational Services, a survey of this design and complexity is going to have a small degree of nonsampling error. Examples of these errors are faulty questionnaire design, inaccuracy of data furnished, ineffective processing, and nonresponse. The possibility of errors in the design of and the data furnished by the questionnaires, as well as errors in processing, was recognized from the start of the survey. Every effort was exercised to avoid and control them.

The nonresponse area was handled to a large degree by the built-in variables of the sampling and estimating process. This process takes into consideration that the occupational distribution of the nonreporting sample unit in a given employment size class is the same as among the reporting establishments of that size class.

Collection Procedures

The Educational Services segment is the only major employer where employment is not readily available from existing records. In consideration of this limitation, the U.S. Department of Labor asked the assistance of the Texas Employment Commission and the Texas Education Agency in collecting occupational employment. The Texas Education Agency sampled public elementary and secondary schools. The Texas Employment Commission surveyed the balance of the Education sector and also made the estimates for all the Education segments.

Data for Educational Services was collected by mail. Survey operations included an initial mail-out and two follow-ups to nonrespondents. In some cases, an extra follow-up was made where nonresponse was a critical factor. The telephone was used to clarify information, handle critical areas, and prompt respondents to furnish survey data.

CONSIDERATIONS OF THE USES OF THE ESTIMATES

Relative Error

Relative error is a measure of precision and expresses the absolute sampling error of an estimate as a percentage of that estimate. From an accuracy standpoint, the higher the relative error - the less accurate the estimate. If relative errors exceeded fifty percent, the employment from these occupations was merged with the employment of the "all other" residual category that was relevant to them.

Throughout the tables, it should be noted that the relative error is computed only for specific occupations and not for residual categories nor for occupational groupings. These are noted by "na" (not applicable).

Rounding Errors and Occupations With Employment Less Than Thirty

All percentage estimates are carried out to two decimal places with the exception of the percent of establishments reporting the occupation. These percentages were rounded to the nearest whole number.

In this survey many more occupations were surveyed than are actually shown in the tables. Occupations which had employment of less than thirty were suppressed, and their employment was added to the residual category for their major occupational group. All employment estimates were rounded to the nearest five.

STAFFING PATTERNS

TABLE 1

ELEMENTARY AND SECONDARY SCHOOLS, PRIVATE

SIC 821

Occupation	Estimated Empl.	% of Total Empl. 1/	Relative Standard Error (%)	% of Establishments Reporting the Occupation
TOTAL EMPLOYMENT	17,145	100.00	na	na
MANAGERS, OFFICERS, AND ADMINISTRATORS, TOTAL	905	5.29	na	na
PROFESSIONAL AND TECHNICAL OCCUPATIONS, TOTAL	12,205	71.18	na	na
Librarians, Professional	445	2.58	32.68	54
Teachers, Secondary School	5,635	32.86	38.98	31
All Other Professional Workers	180	1.05	na	na
All Other Teachers	2/			
SERVICE OCCUPATIONS, TOTAL	1,335	7.79	na	na
Janitors, Porters, and Cleaners	825	4.80	28.55	62
All Other Service Workers	2/			
DISTRIBUTION, MAINTENANCE, CONSTRUCTION, REPAIR, MATERIAL HANDLING, AND POWER PLANT OCCUPATIONS, TOTAL	570	3.32	na	na
CLERICAL OCCUPATIONS, TOTAL	2,130	12.42	na	na
Bookkeepers, Hand	420	2.45	31.23	54
General Clerks, Office	475	2.76	28.41	62
Secretaries	540	3.14	33.00	54
All Other Clerical Workers	695	4.05	na	na

1/ Based on unrounded data.
2/ Estimates below cut-off level so occupations will not add to category total.

THE MOST COMMONLY REPORTED OCCUPATIONS IN THIS INDUSTRY AND THE PERCENT OF ESTABLISHMENTS REPORTING THEM ARE:

Occupation	Percent
General Clerk, Office	62
Janitors, Porters, and Cleaners	62
Bookkeepers, Hand	54
Librarians, Professional	54
Secretaries	54

TABLE 2

ELEMENTARY AND SECONDARY SCHOOLS, PUBLIC

SIC 821

Occupation	Estimated Empl.	% of Total Empl. 1/	Relative Standard Error (%)	% of Establishments Reporting the Occupation
TOTAL EMPLOYMENT	275,510	100.00	na	na
MANAGERS, OFFICERS, AND ADMINISTRATORS, TOTAL	11,120	4.04	na	na
Assistant Principals	2,360	.85	4.35	53
Principals	4,210	1.52	1.28	95
Superintendents	1,715	.62	3.25	98
All Other Managers and Officers	2,835	1.02	na	na
PROFESSIONAL AND TECHNICAL OCCUPATIONS, TOTAL	157,040	57.00	na	na
Caseworkers	335	.12	9.20	14
Curriculum Specialists	1,370	.49	5.91	39
Librarians, Professional	2,915	1.05	2.00	80
Nurses, Professional	2,065	.75	3.01	71
Psychologists	510	.18	11.45	20
Speech Pathologists and/or Audiologists	1,560	.56	7.79	60
Teachers and/or Instructors, Nonvocational Education	1,105	.40	19.82	8
Teachers and/or Instructors, Vocational Education or Training.	2,575	.93	36.27	9
Teachers, Elementary and/or Preschool	68,120	24.72	.34	98
Teachers, Secondary School	69,755	25.31	.33	94
Vocational and Educational Counselors	4,310	1.56	2.43	77
All Other Professional and Technical Workers	595	.22	na	na
All Other Teachers	1,825	.66	na	na

Table 2 (Continued)

Occupation	Estimated Empl.	% of Total Empl.1/	Relative Standard Error (%)	% of Establishments Reporting the Occupation
SERVICE OCCUPATIONS, TOTAL	49,260	17.88	na	na
Cooks, Institution	12,230	4.43	5.63	92
Counter Attendants - Lunchroom, Coffee Shop, or Cafeteria	4,100	1.48	13.10	13
Guards and Doorkeepers	1,210	.43	22.29	11
Janitors, Porters, and Cleaners	19,200	6.96	1.76	99
Kitchen Helpers	12,350	4.48	.84	50
All Other Service Workers	170	.06	na	na
DISTRIBUTION, MAINTENANCE, CONSTRUCTION, REPAIR, MATERIAL HANDLING, AND POWER PLANT OCCUPATIONS, TOTAL	17,950	6.51	na	na
Bus Drivers, School	10,110	3.66	3.76	87
Gardeners and Groundskeepers	1,270	.46	11.71	18
Maintenance Repairers, General Utility	4,960	1.80	6.14	26
Mechanics, Automotive	1,280	.46	4.35	61
All Other Skilled Craftsmen and Kindred Workers	40	.01	na	na
All Other Operatives and Semiskilled Workers	70	.03	na	na
All Other Laborers and Unskilled Workers	220	.07	na	na
CLERICAL OCCUPATIONS, TOTAL	40,140	14.57	na	na
Bookkeepers, Hand	1,115	.40	6.12	71
Bookkeeping and/or Billing Machine Operators	245	.08	15.56	11
General Clerks, Office	7,680	2.78	4.84	63
Keypunch Operators	180	.06	7.93	11
Secretaries	7,305	2.65	3.60	83
Stock Clerks - Stockroom, Warehouse or Storage Yard	445	.16	13.00	18
Teacher Aides and/or Educational Assistants	22,800	8.27	3.19	96
All Other Office Clerical Workers	2/			
All Other Office Machine Operators	2/			

1/ Based on unrounded data
2/ Estimate below cut-off level so occupations will not add to category total.

THE MOST COMMONLY REPORTED OCCUPATIONS IN THIS INDUSTRY AND THE PERCENT OF ESTABLISHMENTS REPORTING THEM ARE:

Occupation	Percent
Janitors, Porters, and Cleaners	99
Superintendents	98
Teachers, Elementary and/or Preschool	98
Teacher Aides and/or Educational Assistants	96
Principals	95

TABLE 3

COLLEGES, UNIVERSITIES, PROFESSIONAL SCHOOLS, AND JUNIOR COLLEGES

SIC 822

Occupation	Estimated Empl.	% of Total Empl. 1/	Relative Standard Error (%)	% of Establishments Reporting the Occupation
TOTAL EMPLOYMENT	126,750	100.00	na	na
MANAGERS, OFFICERS, AND ADMINISTRATORS, TOTAL	7,475	5.90	na	na
PROFESSIONAL AND TECHNICAL OCCUPATIONS, TOTAL	67,360	53.14	na	na
Accountants and Auditors	510	.40	5.81	64
Agricultural Scientists	220	.17	39.98	3
Assistant Professors	7,600	5.99	7.18	62
Associate Professors	5,855	4.61	6.45	63
Athletic Coaches	540	.42	8.35	55
Audio Visual Specialists	75	.05	24.84	9
Biological Scientists	1,330	1.04	25.58	8
Computer Programmers	500	.39	18.70	56
Extension Service Specialists	700	.55	40.08	3
Graduate Assistants	5,605	4.42	15.33	33
Lecturers	3,665	2.89	20.76	28
Librarians, Professional	1,050	.82	5.90	98
Licensed Practical Nurses	305	.24	39.83	20
Medical and Dental Technicians and Technologists	520	.41	42.66	8
Medical Scientists	65	.05	33.85	4
Nurses, Professional	1,055	.83	35.70	51
Personnel and Labor Relations Specialists	285	.22	10.32	40
Professors	5,345	4.21	5.78	65
Purchasing Agents and/or Buyers	95	.07	23.54	11
Science Technicians	3,410	2.69	13.39	20
Systems Analysts, Electronic Data Processing	430	.33	11.65	40
Teachers and/or Instructors, Nonvocational Education	2,185	1.72	22.19	20

Table 3 (Continued)

Occupation	Estimated Empl.	% of Total Empl. 1/	Relative Standard Error (%)	% of Establishments Reporting the Occupation
Teachers - College, Junior College, University, Professional School, or Technical Institute	19,910	15.71	3.33	95
Technical Assistants, Library	640	.50	12.05	59
Vocational and Educational Counselors	910	.71	8.61	77
All Other Professional Workers	2,090	1.65	na	na
All Other Teachers	2/			
All Other Technical Workers	2,280	1.80	na	na
SERVICE OCCUPATIONS, TOTAL	12,410	9.80	na	na
Supervisors, Nonworking - Service	675	.53	7.19	66
Cooks, Institution	630	.49	9.48	48
Counter Attendants - Lunchroom, Coffee Shop, or Cafeteria	235	.18	11.81	29
Dining Room Attendants, Bartender Helpers, or Cafeteria Attendants	750	.59	33.56	20
Guards and Doorkeepers	970	.76	7.02	70
Janitors, Porters, and Cleaners	6,430	5.07	3.39	91
Kitchen Helpers	1,015	.80	19.62	27
Pantry, Sandwich and/or Coffee Makers	150	.11	30.26	13
All Other Food Service Workers	2/			
All Other Service Workers	1,555	1.23	na	na
DISTRIBUTION, MAINTENANCE, CONSTRUCTION, REPAIR, MATERIAL HANDLING, AND POWER PLANT OCCUPATIONS, TOTAL	6,420	5.06	na	na
Supervisors, Nonworking	435	.34	9.86	54
Carpenters	490	.38	9.30	54
Electricians	310	.24	5.67	44
Gardeners and Groundskeepers	1,580	1.24	5.26	80
Helpers, Trades	830	.65	13.98	34
Maintenance Repairers, General Utility	1,220	.96	10.11	77
Painters, Maintenance	430	.33	10.85	48
Press Operators and/or Plate Printers	210	.16	30.01	21

Table 3 (Continued)

Occupation	Estimated Empl.	% of Total Empl. 1/	Relative Standard Error (%)	% of Establishments Reporting the Occupation
Stationary Boiler Firers	255	.20	11.47	22
All Other Skilled Craftsmen and Kindred Workers	365	.29	na	na
All Other Operatives and Semiskilled Workers	2/			
All Other Laborers and Unskilled Workers	180	.14	na	na
CLERICAL OCCUPATIONS, TOTAL	32,825	25.90	na	na
Clerical Supervisors, Office or Plant	495	.39	14.47	47
Accounting Clerks	1,325	1.04	4.45	73
Admissions Evaluators	285	.22	9.20	60
Bookkeepers, Hand	130	.10	11.33	38
Cashiers	480	.37	10.32	72
Computer Operators	360	.28	4.80	56
File Clerks	1,545	1.21	35.23	20
General Clerks, Office	5,730	4.51	9.09	66
Keypunch Operators	565	.44	14.97	50
Library Assistants	820	.64	10.81	76
Mail Clerks	310	.24	6.58	62
Payroll and/or Timekeeping Clerks.	120	.09	10.45	53
Personnel Clerks	110	.08	13.25	34
Receptionists	420	.32	42.69	27
Secretaries	8,840	6.97	5.03	97
Statistical Clerks	125	.10	17.46	18
Stenographers	210	.16	18.57	12
Stock Clerks - Stockroom, Warehouse or Storage Yard	695	.54	10.94	53
Switchboard Operator-Receptionists	80	.06	12.17	30
Switchboard Operators	250	.19	7.84	59
Teacher Aides and/or Educational Assistants	2,015	1.59	38.66	10
Typists	3,055	2.41	8.30	59
All Other Clerical Workers	2/			
All Other Office Machine Operators	2/			
SALES OCCUPATIONS, TOTAL	260	.20	na	na
Sales Clerks	250	.19	19.26	35
All Other Sales Workers	2/			

1/ Based on unrounded data.
2/ Estimate below cut-off level so occupations will not add to category total.

THE MOST COMMONLY REPORTED OCCUPATIONS IN THIS INDUSTRY AND THE PERCENT OF ESTABLISHMENTS REPORTING THEM ARE:

Occupation	Percent
Librarians, Professional	98
Secretaries	97
Teachers - College, Junior College, University, Professional Schools, or Technical Institutes	95
Janitors, Porters, and Cleaners	91
Gardeners and Groundskeepers	80

TABLE 4

LIBRARIES AND INFORMATION CENTERS
CORRESPONDENCE SCHOOLS AND VOCATIONAL SCHOOLS
SCHOOLS AND EDUCATIONAL SERVICES, NOT ELSEWHERE CLASSIFIED

SIC 823, 824, & 829

Occupation	Estimated Empl.	% of Total Empl. 1/	Relative Standard Error (%)	% of Establishments Reporting the Occupation
TOTAL EMPLOYMENT	3,925	100.00	na	na
MANAGERS, OFFICERS, AND ADMINISTRATORS, TOTAL	605	15.40	na	na
PROFESSIONAL AND TECHNICAL OCCUPATIONS, TOTAL	2,315	58.97	na	na
Curriculum Specialists	40	.99	33.44	15
Librarians, Professional	65	1.68	40.52	12
Teachers and/or Instructors, Nonvocational Education	690	17.58	23.30	24
Teachers and/or Instructors, Vocational Education or Training	1,135	28.89	11.76	58
All Other Professional & Technical Workers	105	2.68	na	na
All Other Teachers	280	7.14	na	na
SERVICE OCCUPATIONS, TOTAL	145	3.72	na	na
Janitors, Porters, and Cleaners	90	2.31	25.74	31
All Other Service Workers	55	1.40	na	na
DISTRIBUTION, MAINTENANCE, CONSTRUCTION, REPAIR, MATERIAL HANDLING, AND POWER PLANT OCCUPATIONS, TOTAL	80	2.06	na	na
CLERICAL OCCUPATIONS, TOTAL	660	16.79	na	na
Accounting Clerks	35	.86	33.91	15
Bookkeepers, Hand	75	1.88	26.95	33
File Clerks	40	.99	42.77	13
General Clerks, Office	140	3.54	29.26	31
Library Assistants	50	1.27	46.04	4
Secretaries	170	4.35	17.22	51
All Other Clerical Workers	2/			

Table 4 (Continued)

Occupation	Estimated Empl.	% of Total Empl. 1/	Relative Standard Error (%)	% of Establishments Reporting the Occupation
SALES OCCUPATIONS, TOTAL	120	3.06	na	na
Sales Representatives, Agents, and/or Associates	115	2.95	24.44	30
All Other Sales Workers	2/			

1/ Based on unrounded data.
2/ Estimate below cut-off level so occupations will not add to category total.

THE MOST COMMONLY REPORTED OCCUPATIONS IN THIS INDUSTRY AND THE PERCENT OF ESTABLISHMENTS REPORTING THEM ARE:

Occupation	Percent
Teachers and/or Instructors, Vocational Education or Training	58
Secretaries	51
Bookkeepers, Hand	33
General Clerks, Office	31
Janitors, Porters, and Cleaners	31

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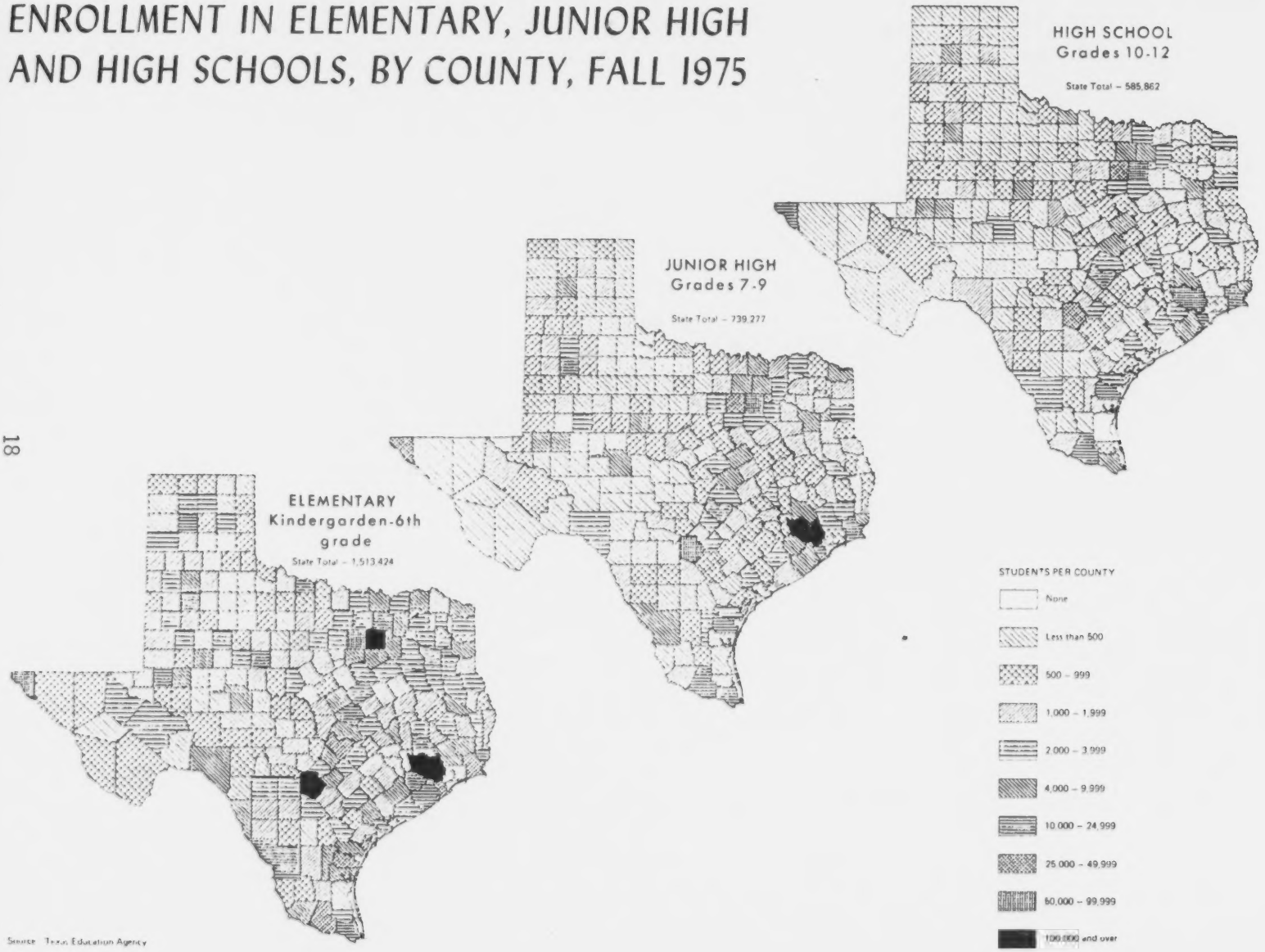
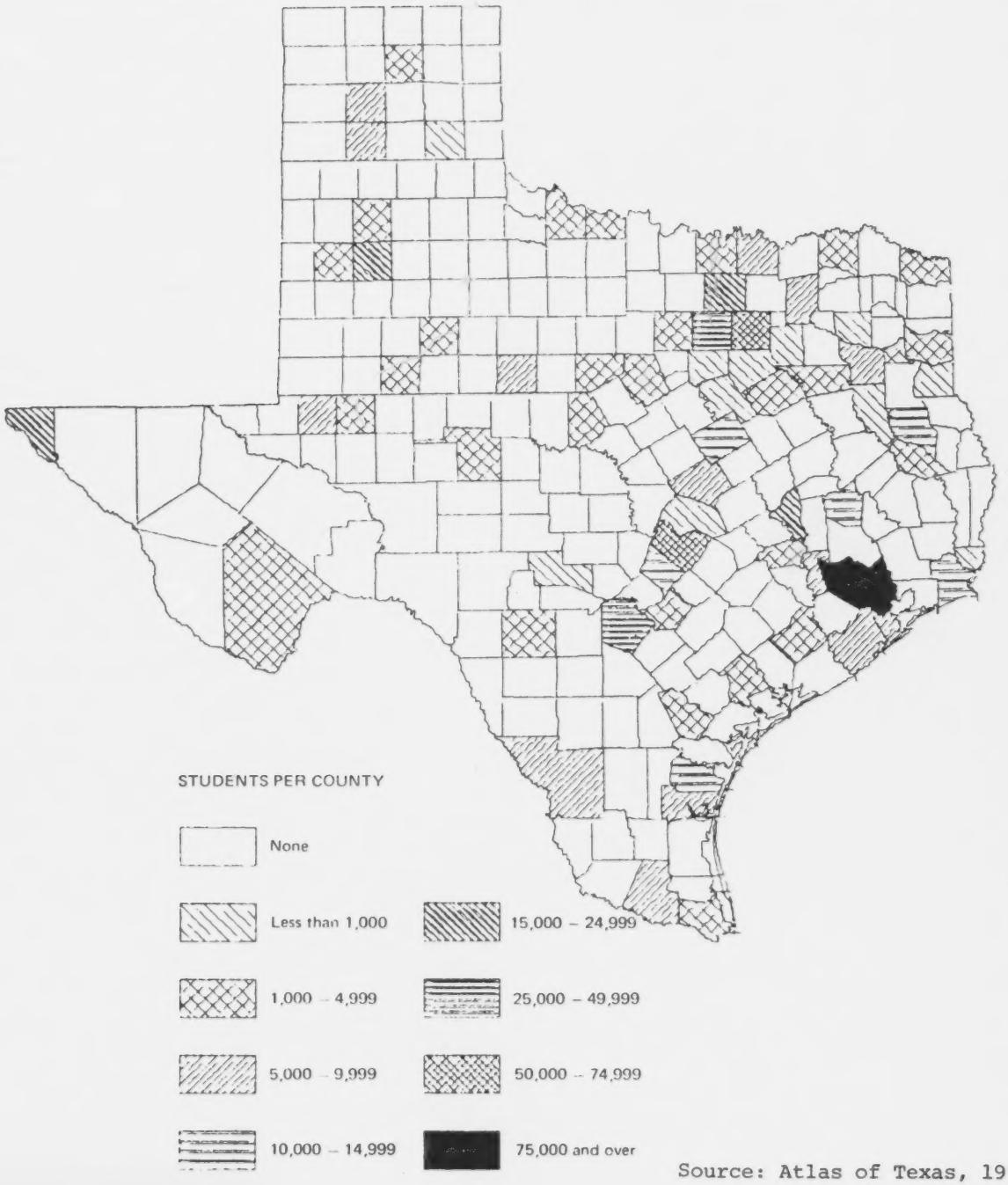
ENROLLMENT IN ELEMENTARY, JUNIOR HIGH AND HIGH SCHOOLS, BY COUNTY, FALL 1975



Source: Texas Education Agency

ENROLLMENT IN INSTITUTIONS OF HIGHER EDUCATION BY COUNTY, FALL 1975



Source: Atlas of Texas, 1976

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GLOSSARY OF TERMS

Benchmark Employment: A term which is used to identify specific employment figure(s) which existed at a particular point in time. In the OES survey program, the term benchmark is used in two ways: (1) It is the establishment or industry employment that existed at the time the sample was designed. (2) When estimates are made, it is used again to refer to the total universe employment for each estimating cell as of the reference date of the survey.

ES-202: A quarterly listing of employment and contributions of all firms covered under the unemployment insurance laws of Texas.

Establishment: An economic unit which produces goods or services, for example: a consulting service, a factory, or a store. In most instances, each establishment is a single physical location and is engaged in one predominate type of economic activity for which an industry code is applicable. Establishments are also referred to as reporting units.

Estimating Cell: One size class in one industry.

Sample Weight: A numerical value that is assigned to an establishment during the sample selection. For example, if an establishment has an occupational employment of 25 and a weight of three, then for estimating purposes, the 25 employment will have a representation of 75 (3x25).

Sampling Error: The difference between data obtained from a sample and data which would have been obtained if the same survey methods were applied to collecting identical information from the entire population.

Sampling Frame: The sampling units actually available to sample.

Sampling Units: The establishments selected randomly from the universe.

Size Class: The stratification of an industry by employment. For example, establishments with employment of 10-19 would be in one size class, and those with employment of 20-49 would be in another size class, etc.

Standard Industrial Classification (SIC): A grouping of establishments primarily engaged in the same or similar lines of economic activity. In Educational Services, the line of activity is generally defined as any function that excludes Manufacturing, Nonmanufacturing, Wholesale and Retail Trade, Regulated Industries, and Government. Throughout this report, SIC's are correlated with a significant numerical designation. For example, SIC 822 is colleges, universities, professional schools, and junior colleges.

Universe: Total amount of establishments or units covered under the Texas Employment Security Law.

Usable Response: All receipts which, after initial classification and schedule review, are judged to contain usable OES data.

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